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(54) PRODUCTION OF YBCO THIN FILM AND YBCO THIN FILM COATED BODY

(57)Abstract:

PROBLEM TO BE SOLVED: To form a YBCO thin film having the c-axis perpendicular to the substrate, high critical current density and little interfaces of crystal grains on the substrate by heating a MgO single crystal substrate having [110] plane direction in a specified temp. range and forming a film of oxide superconducting YBCO thereon.

SOLUTION: A MgO single crystal substrate having [110] plane direction is heated at $\geq 650^{\circ}\text{C}$, on which a film of oxide superconducting YBCO is formed. The plane direction [110] represents all equivalent planes of (100), (010), ($\bar{1}00$), etc. By using the substrate having this plane direction, the film formed has orientation along the c-axis and YBCO grains oriented in the plane direction. The thin film is formed by a normal method such as laser ablation, sputtering, etc. The substrate temp. during forming the film is preferably controlled to 675 to 850°C . The obtd. thin film-coated material having the YBCO thin film shows excellent superconducting characteristics and is useful as a superconducting device in the field of electronics.

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